

Chapter 4 – Integrated Pest Management (IPM)

4.1 Goals and Philosophy of IPM

King County has adopted Integrated Pest Management (IPM) as its approach to prevent unacceptable levels of pests at its facilities, landscapes, parks, public lands and roadways. The IPM approach is a process of:

- Evaluating and determining which pest is of concern.
- Exploring if the effects are tolerable.
- Considering what actions are appropriate to reduce intolerable effects to tolerable levels if effects are not acceptable.

Chemical controls through the use of pesticides are only one of the possible controls that should be considered. The King County Park System uses pesticides only when absolutely necessary. When pesticides are used, we select the product least toxic (acute and persistent) to people and the environment.

The nearly 20,000 acres of parks and public lands managed by the King County Park System are very important to the mental and physical health of our region. All landscapes, however, are susceptible to threats from a variety of pests. Because some pests pose a threat not only to the landscape but also to park users, King County must manage pests in its parks and public lands.



Our goals in doing that include the following:

- Address the safety of our park users.
- Protect the health and value of the landscape assets.
- Preserve and enhance King County's environmental and natural ecosystems.
- Ensure an intact, public legacy in our designed and developed parks.
- Provide attractive landscapes for public enjoyment.

Integrated Pest Management (IPM)

- Provide functional and well-maintained active-use facilities.

In meeting these goals, IPM is used to control those pests that could damage or injure our environments, landscapes or park users. Budget realities will in some cases dictate the approach used, but Parks must seek sufficient funding to allow budgetary constraints to be a secondary, not primary, consideration.

4.2 Definitions

Action level refers to level at which action must be taken to prevent a pest population at a specific site from reaching the **injury level**

Prescription: refers to pest control activities utilize principles of IPM specific to types of sites or specific locations. We call this strategy an IPM “prescription.” An IPM prescription addresses needs and uses of parklands while promoting the health and vigor of desirable vegetation. A BMP prescription ensures that natural predators of undesirable vegetation or of other pests are not eliminated.

Injury level refers to point at which growth of a pest causes some unacceptable level of safety, public health, recreational impact, ecosystem, aesthetic or economic injury.

Integrated Pest Management (IPM): coordinated decision-making process and set of actions for pest control and vegetation management. IPM determines if, when, where and how pest control is needed and employed. The IPM process encourages design and implementation or retention of landscapes that meet their intended purposes while promoting healthy plants and minimizing pest problems. IPM requires careful monitoring to determine if and what form of pest control is necessary.

Pest: any weed, insect, rodent, nematode, snail, fungus or other plant or animal that adversely interferes with the aesthetics, health, safety, environmental or economic goal of the County. Pests (vectors) do not include viruses or microorganisms on or in a living person or animal, but do include plant diseases.

Pesticides: any substance registered by the Washington State Department of Agriculture (WSDA) as a pesticide.

4.3 Integrated Pest Management Program

The IPM process follows a continuum from design to maintenance. It begins with design and construction decisions or habitat analysis in natural areas and is followed by appropriate management actions by staff with up-to-date training. IPM uses cultural, physical, mechanical, biological and, where needed, chemical controls to keep pest populations or vegetation problems low enough to prevent intolerable damage, annoyance or public safety hazards. An IPM program must consider all these factors while remaining economically and environmentally feasible.

IPM encompasses use of chemical controls (pesticides), specifically in situations where pesticides may be the most environmentally responsible or safest way to deal with a problem. When pesticides are necessary, decisions on their use must consider any possible effects on aquatic life and any tendencies for the chemical to move in the

Integrated Pest Management (IPM)

environment. Decisions on chemical use are also weighed against other effective and practical control methods. An IPM program has nine major components:

- 1. Design.** A landscape, facility, or natural area should be designed to maximize intended uses of the land and minimize pest problems. Design considers such factors as types of use, soils, grading and slope, water table, drainage, proximity to sensitive areas, existing vegetation and control of potential pests.
- 2. Maintenance for Maximum Landscape Health.** A well-selected and maintained landscape dramatically reduces the need for pest control. Appropriate selection of plants, irrigation, application of mulch or fertilizer, mowing and other practices all help landscapes withstand pest pressures and support natural predators.
- 3. Knowing the Pest.** Identification of pests and their lifecycle are crucial to proper management. To focus IPM strategies, potential pests should be documented and then carefully identified. Field staff needs the opportunity to train in pest identification and time to conduct regular assessments.
- 4. Determining Tolerance, Injury and Action Levels.** IPM must establish tolerance thresholds. Thresholds may vary by pest, specific location or land use. Weed thresholds will differ among natural areas, developed parks and trails. Insect or plant disease tolerances likewise depend on use or location. There are some situations in which threshold levels must be set at or near zero. Laws and regulations set the population level at zero for most noxious weed species given their potential for economic injury or public health or environmental impact. Safety and infrastructure protection also factor into very low or zero thresholds for weeds. Examples include warning tracks or paved areas.
- 5. Monitoring for Pests.** Regular monitoring is important to assess pest levels, extent of infestation, locations and lifecycle. Assessments of established tolerance are necessary.
- 6. IPM Prescription.** The following elements should be considered when selecting appropriate IPM prescriptions:
 - Preservation of natural systems and long-term health of the area.
 - Damage to natural environment.
 - Disruption to those natural controls that are present.
 - Hazards to human health.
 - Toxicity to aquatic life, including all aspects of salmon lifecycle and salmon food and amphibian lifecycles food.
 - Mobility and persistence in the environment.
 - Impact to non-target organisms.

Integrated Pest Management (IPM)

- Timing relative to most vulnerable period in pest's lifecycle with least impact on natural enemies.
- Ability to produce long-term reduction in pest.
- Ability to be carried out effectively.
- Cost-effectiveness in short- and long-term.
- Ability to be measured.

7. Implementation of IPM Prescription. Well-trained staff should fully implement the prescription and record steps and control methods used.

8. Monitoring and Evaluation. Effectiveness of an IPM prescription should be measured, careful records kept and an evaluation process conducted to assess how well it brings about the desired results.

9. Learning and Revision. The results of applying IPM prescriptions and programs should be reviewed regularly and revised based on experience.

Control Methods

The control methods used in an IPM approach include the following:

- **Cultural.** Management activities that prevent pests from developing by enhancing desirable vegetation that out-competes or otherwise resists the pests. Cultural controls include seeding, fertilizing, mulching, pruning and trimming, and companion planting.
- **Physical.** Management activities that use hand removal, burning, barriers, baits, traps or other physical means to control pests.
- **Mechanical.** Management activities that use mechanical equipment to control pests. This equipment includes mowers, brush cutters, blades, hoes or weed-eaters.
- **Biological.** Management activities that use insects, animals, birds, diseases or competing vegetation to control pests.
- **Chemical.** Management activities that use chemical agents registered as pesticides by the Washington State Department of Agriculture (WSDA). Pesticides include herbicides, insecticides, fungicides and other chemicals. These chemicals repel, change the regular growth rate of, eradicate or otherwise reduce levels of targeted pests.

Record Keeping

Record keeping is essential for any successful IPM program. The following records must be maintained:

Integrated Pest Management (IPM)

IPM Program and Prescription: Written IPM program and IPM prescriptions.

These are kept in accessible locations and at the central records location at the Renton Shops.

Pest Identification and Assessment: Records of each documented pest. Records include date, specific location, name, reference used for identification, corroborating expert (as needed) stage of lifecycle, extent of pest presence and other pertinent information.

Control Methods Implemented: Control methods employed according to the IPM prescription. These include dates, location and other pertinent information.

Pesticide Applications: If chemical methods are employed, pesticide application records as required by WSDA, include, but are not limited to, the following:

- Licensed applicator's name.
- Application target or site, chemical name.
- Area of application, concentrations used.
- Amount and rate of application.
- Coverage rate.
- Equipment used.
- Weather conditions including temperature and wind, and date and time intervals of application.

Monitoring: The results of each IPM prescription should be recorded in a way that fosters useful evaluation and allows revisions. The revision process should be documented.

4.4 Training

Orientation to IPM Policy

All staff associated with design, construction, and maintenance of parklands, landscaped buildings, facilities and other areas where pests must be controlled or vegetation managed will receive an orientation to the IPM policy and its guidelines.

IPM Training

Staff responsible for vegetation management should receive training on:

- An overview of IPM including (1) identifying lifecycles of typical Northwest pests, weeds, and beneficial insects, (2) determining threshold levels for different types of landscapes, and (3) monitoring techniques.

Integrated Pest Management (IPM)

- Noxious weed identification, control and regulations.
- Pesticide laws and safety.
- Specific BMPs as appropriate.

4.5 Program Review and Coordination

King County Parks has established an in-house committee to review internal IPM practices. King County Parks also participates on any King County wide steering committees formed to develop and monitor the Integrated Pest and Vegetation Management Policy. This steering committee would include representatives from each department or division responsible for pest control or vegetation management. This committee would meet periodically to evaluate their progress in implementing guidelines and revise IPM programs as needed.

Public Information

Information and advice regarding pest control and vegetation management given to the public, landowners or other jurisdictions should be consistent with this policy.

